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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,339	08/04/2003	David Xiao Dong Yang	PIX-P-039	6759

32566 7590 07/03/2007

PATENT LAW GROUP LLP
2635 NORTH FIRST STREET
SUITE 223
SAN JOSE, CA 95134

EXAMINER
GILES, NICHOLAS G

ART UNIT	PAPER NUMBER
2622	

MAIL DATE	DELIVERY MODE
07/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/634,339	DONG YANG ET AL.	
	Examiner	Art Unit	
	Nicholas G. Giles	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *14-19 and 24* is/are allowed.

6)☒ Claim(s) *1,2,10-13 and 20-22* is/are rejected.

7)☒ Claim(s) *3-9 and 23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

3. Claim **9** is objected to because of the following informalities: The phrase, "...provides an LUT codeword..." should be changed to "...provides a LUT codeword..."

Appropriate correction is required.

4. Claim **10** is objected to because of the following informalities: The phrase, "...conversion scheme for..." should be changed to "...conversion schemes for..." Appropriate correction is required.

5. Claim **23** is objected to because of the following informalities: The phrase, "...conversion scheme for..." should be changed to "...conversion schemes for..." Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims **20-22** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim **20**, the phrase, "...an interface circuit between said interface circuit and said frame buffer, said interface circuit..." renders the claim unclear as there are two "interface circuits" claimed. For examination purposes the phrase above will be treated to read, ""...a second interface circuit between said interface circuit and said frame buffer, said second interface circuit..." Appropriate correction is required.

Regarding claims **21-22**, these claims depend on claim 20 and therefore are rejected.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims **1-2 and 10-11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al (U.S. Patent No. 6,101,271) in view of Post (U.S. Patent No. 7,209,168).

Regarding claim **1**, Yamashita et al. discloses:

> An imaging system comprising: a data memory (there must be memory in order to remember and provide the R, G, and B signals in Fig. 1) for storing codewords (each video signal), at least some of said codewords being indicative of data (each video signal); a programmable lookup table (Correction coefficient calculation means 2 Fig. 1), in communication with said data memory, for providing LUT codewords (correction value k) as output data (4:42-5:20 and 6:9-17); and a processing unit (multipliers 3,4, and 5 Fig. 1) in communication with said data memory and said lookup table, for receiving LUT codewords from said lookup table and generating output image data, wherein a first codeword stored in said memory is used to index said lookup table for causing said lookup table to provide a respective LUT codeword to said

processing unit, and said processing unit operates to perform on or more image processing functions in response to said LUT codeword (4:42-5:20 and 6:9-17).

Yamashita et al. is silent with regards to a two-dimensional array of pixel elements providing pixel data. Post discloses using a two-dimensional array of pixel elements proving pixel data in 4:10-22. An advantage to this is that two-dimensional image can be formed that a user can view. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Yamashita include a two-dimensional array of pixel elements providing pixel data.

Regarding claim **2**, Yamashita et al. and Post are silent with regard to codewords being in k bits and the lookup table comprising 2^k entries. Official Notice is taken that it was well known at the time the invention was made to have k bit codes reference tables with 2^k entries. An advantage to doing so is that when a k bit code is used to reference the table it can access all of the table contents (i.e. the number of table entries isn't larger than what a k bit code can represent in binary) and so that the table is as large as possible in order to have the most entries possible at the processors disposal for processing. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Yamashita include codewords being in k bits and the lookup table comprising 2^k entries.

Regarding claim **10**, see the rejection of claim 1 and note that Yamashita et al. and Post are silent with regards to selecting one of a plurality of A/D conversion schemes. Official Notice is taken that it was well known at the time the invention was

made to select an A/D conversion scheme from a plurality of possible schemes. An advantage to doing so is that the user can have flexibility in how much space an image will take up in a memory after being digitized (i.e. TIF, JPEG, bitmap etc.). For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Yamashita select one of a plurality of A/D conversion schemes.

Regarding claim **11**, see the rejection of claim 1 and note that Yamashita et al. and Post are silent with regards to using a dark signal subtraction algorithm. Official Notice is taken that using dark signal subtraction was well known at the time the invention was made. An advantage to using dark signal subtraction is that dark current caused by heat can be minimized in a final output image. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Yamashita et al. include using a dark signal subtraction algorithm.

10. Claims **12 and 13** are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamashita et al. in view of Post in further view of Fowler et al. (U.S. Patent No. 5,461,425).

Regarding claim **12**, see the rejection of claim 1 and note that Yamashita et al. and Post are silent with regards to the image sensor performing A/D conversion. Fowler et al. discloses this in 2:46-54. Fowler et al. discloses in 2:8-10 that an advantage to doing this is that parasitic effects and distortion are minimized. For this reason it would have been obvious to one of ordinary skill in the art at the time the

invention was made to have Yamashita et al. modified by Post include the image sensor performing A/D conversion.

Regarding claim **13**, see the rejection of claim 1 and note that Yamashita et al. and Post are silent with regards to the array being digital pixels and outputting digital pixel data. Fowler et al. discloses this in 2:46-54. Fowler et al. discloses in 2:8-10 that an advantage to doing this is that parasitic effects and distortion are minimized. For this reason it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Yamashita et al. modified by Post include the array being digital pixels and outputting digital pixel data.

Allowable Subject Matter

11. Claims **14-19 and 23-24** are allowed.

Regarding claim **14**, no prior art could be located that teaches or fairly suggests storing first pixel codewords in a data memory, some of the codewords indicative of pixel data, that are used to index a first set of LUT codewords in a first programmable lookup table where a first processing unit is in communication with the data memory and first lookup table being operable to perform a first set of image processing functions in response to the first set of LUT codewords and providing output data in the form of a second set of pixel codewords where an interface circuit is in communication with the first processing unit and receives the second set of pixel codewords, where a frame buffer is in communication with the interface circuit for storing the second set of pixel codewords, and a second programmable lookup table is in communication with the

frame buffer and outputs second LUT codewords when the second lookup table is indexed by the second set of pixel codewords, and a second processing circuit is operated to perform a second set of image processing functions in response to the second set of LUT codewords and generating output image data, in combination with the rest of the limitations of the claim.

Regarding claims **15-19 and 23-24**, these claims depend on claim 14 and therefore are allowed.

12. Claims **3-9** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim **3**, no prior art could be located that teaches or fairly suggests the limitations of claim 1 in combination with the data memory storing k bits for each pixel location where a first portion of the k bits is used to store CDS subtract values for each pixel location and a second portion of the k bits is used to store a pixel codeword for the respective pixel location, in combination with the rest of the limitations of the claim.

Regarding claim **4**, this claim depends on claim 3 and therefore is objected to.

Regarding claim **5**, no prior art could be located that teaches or fairly suggests the limitations of claim 1 in combination with an interface circuit between the image sensor and the data memory where the interface circuit prevents writing of pixel data at

a first location in the data memory when a pixel codeword stored at the first location indicates a reserved codeword.

Regarding claims **6-9**, theses claims depend on claim 5 and therefore are objected to.

13. Claims **20-22** would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Patents 5,461,425, 5,801,657, 6,975,355 and applications 09/567638, 09/567786, 10/185584 are all cited in the specification and not on a PTO-1449 and therefore are cited on the PTO-892.

Patent 6,963,369 – pixel data field and CDS data field

Pub. No. 2002/0140842 – pixel data field and time index field

Patent 6,987,536 – pixel data field and time index field

Patent 5,801,657 – A/D converter with pixel

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas G. Giles whose telephone number is (571) 272-2824. The examiner can normally be reached on Monday through Friday from 7:30am to 4:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivek Srivastava can be reached on (571) 272-7304. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

NGG

VIVEK SRIVASTAVA
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600